



Farm Operations Cost Guide

• Custom Rates Survey Summary • Farm Machinery Cost Guide • Calculating Farm Machinery Costs

Alberta

AGRICULTURE, FOOD AND
RURAL DEVELOPMENT

Statistics and Data Development Unit
Agricultural Business Management Branch

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Introduction

Since 1975, the Agricultural Business Management Branch of Alberta Agriculture, Food and Rural Development has annually surveyed custom rates, rental rates and the new cost of farm machinery to provide information to farmers and custom operators.

The first part of this publication presents a summary of custom work and rental rates during 2000. These rates are only intended as a guide. **They are not to be interpreted as the rates you must charge or pay.**

The surveys were conducted by Maureen Wenger of the Statistics and Data Unit from February 2000 through December 2000 and summarized by David Thacker, who is associated with the Agricultural Business Management Branch.

The department gratefully acknowledges the contribution of the farmers and custom operators who willingly co-operated by providing information about their custom and rental rates.

Again for 2001, a listing of prices for some common farm inputs is included. These prices are collected throughout the year by Wild Rose Ag Producers (formerly Unifarm) and the Statistics and Data Development Unit of Alberta Agriculture, Food and Rural Development.

Part three of this publication is a farm machinery cost guide, which provides information on the cost of owning and operating farm machinery. Technical information such as current machinery prices, repair rates, performance, capacity, fuel consumption and fuel price are used to calculate fixed and variable costs. The cost calculations are intended to be used as approximate costs based on new machinery prices as of December 1999.

This year, the Years of Life and Salvage Value have been changed to more accurately indicate what was happening in the marketplace. We feel this adjustment will make our calculation more accurate, but we are still using average numbers, so we recommend that you use your specific information and the worksheets or the online Machinery Cost Calculator wherever possible. This work was done by Dann Mattson of the Agricultural Business Management Branch in Olds.

If you require further assistance in using this material, contact an Alberta Agriculture, Food and Rural Development district office or Farm Management Specialist. Locations and telephone numbers for Farm Management Specialists are listed on page 31.

Other Information Sources

Know Your Farm Machinery Costs, Alberta Agriculture, Food and Rural Development, Agdex 825-6, March 1989

Farm Machinery Custom and Rental Rate Guide, 1998
Saskatchewan Agriculture and Food

Farm Machinery Rental and Custom Rate Guide, 1998
Manitoba Agriculture Farm Management

The online Machinery Cost Calculator at:
<http://www.agric.gov.ab.ca/machcost>

Try the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>

Custom Rates Survey Summary

Objective

The specific objective of this survey summary is to organize and report 2000 custom rates for certain custom operations on the farm. No effort is made to evaluate the fairness of reported rates. **The goal is to report what is being charged, not what should be charged.** Because many of the surveys were conducted in 2000, higher costs or other market factors may have resulted in higher custom rates by the time of publication.

Sample size

Sample size is often small, and thus, reported rates should only be used as a general indication of rates being charged for various custom operations in Alberta. **Custom rates in this publication are not to be interpreted as recommended rates.** Rates charged by individual custom operations should still be evaluated on their own merit.

Users of custom rates information

Farmers may find custom rates useful as a guide for machinery management, budgeting and financial planning for credit needs. Also, custom rates can be used as a guide in negotiating settlements for work performed for neighbors or others. Lenders, educators, government institutions and others doing budgeting or planning analysis may also find custom rates helpful in their work. Custom operators can use these guides to compare their own rate with the market rate in a certain area.

Understanding the tables

Custom rates for various operations in Alberta are presented on pages 4 to 18. The tables are itemized under type of:

- operation surveyed
- location where rates apply
- most common rates charged in 1999
- range of rates charged in 2000
- most common rates charged in 2000

Under the heading **Location**, three regions, south, central and north are identified. When survey reports were insufficient for regional comparisons, the location is identified as Alberta. The map on page 3 outlines the regional boundaries.

Custom rates in 2000 for the various operations are shown as Range-2000 and Most Common-2000. The rates quoted most often by custom operators are under the heading Most Common-2000. Variations in rates from lowest to highest are under the heading Range-2000. The reason for these ranges is due to many factors, some of which are listed below.

Factors contributing to lower rates:

- neighborly work exchange
- location of job in relation to home base of custom operator
- custom operator's desire to cover variable costs but not necessarily all fixed costs
- use of older equipment that does not reflect current investment cost and/or has a lower capacity
- services such as labor, meals, fuel, supervision, transportation or other convenience services being provided to the custom operator by the farmer
- the size of job

Factors contributing to higher rates:

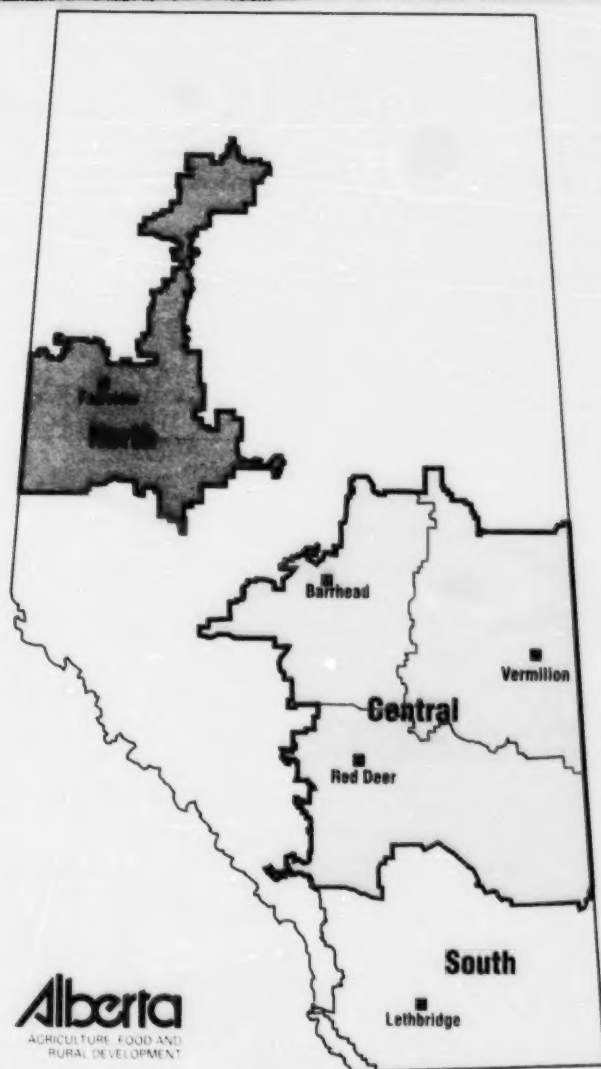
- full-time custom operators who are covering all costs
- charging what the market will bear
- tough jobs requiring extra power, repairs, fuel or time
- field conditions such as rocks, rough terrain, obstructions or high yield crops
- small size jobs
- higher capacity machines

How to use custom rates information

Rates quoted in this publication for the various custom operations are expressed in numerous ways (per hour, ton, tonne, bale, acres, etc.). Before comparing the various custom operations, always choose the appropriate basis on which to compare. For example, grain harvesting may require a per acre cost as compared to corral cleaning where a per hour rate is more appropriate. When custom rates are given in dollars per hour, it is advisable to convert to a physical unit cost (bushels, tonnes, acres) appropriate to that

operation. A low cost per hour can be a very high cost per acre, tonne, etc.

Because custom rates quoted in this publication may not suit all custom operators and those hiring custom work, you should calculate your own custom costs. For more information on how to calculate your own cost, consult Sections Two and Three of this book or use the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>



Operation	Location	Most Common 1999	Range 2000	Most Common 2000
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Tillage

Plowing — crop and stubble (also see "land clearing and breaking" on page 11)

Alberta	\$8/ac	\$105/hr \$350 – 450/day	\$105/hr \$350 – 450/day
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— hay and pasture

Alberta	\$10 – 24/ac \$95 – 125/hr	\$30/ac* \$50 – 105/hr	\$30/ac* \$60 – 90/hr
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Total reports = 16; Surveyed Fall 2000

Discing — crop and stubble

Alberta	\$5 – 7.50/ac \$110/hr*	\$6 – 30/ac \$60 – 125/hr	\$6 – 30/ac \$60 – 125/hr
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— hay and pasture

Alberta	\$10 – 17/ac \$75 – 110/hr	\$6 – 30/ac \$55 – 125/hr	\$4.50 – 5.50/ac \$60 – 100/hr
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Total reports = 41; Surveyed Fall 2000

Rototilling — hay and pasture

Alberta	\$90 – 120/hr	\$100/hr*	\$100/hr*
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Total reports = 1; Surveyed Fall 2000

Cultivating

Alberta	\$6/ac \$50 – 85/hr	\$4.50 – 10/ac \$60 – 125/hr	\$5 – 6/ac \$60 – 85/hr
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Total reports = 18; Surveyed Fall 2000

Harrowing

Alberta	\$3 – 3.50/ac \$50 – 75/hr	\$2 – 3.50/ac —	\$3/ac —
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Total reports = 5; Surveyed Fall 2000

Harrowing & packing

Alberta	\$2.50/ac	\$2.25 – 3.50/ac \$105/hr*	\$2.25 – 3.50/ac \$105/hr*
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Total reports = 4; Surveyed Fall 2000

See cost calculations page 24 and 25

Seeding

Seeding — air seeder/airdrill

South	\$8 – 15/ac	\$6 – 20/ac	\$10 – 15/ac
Central	\$8 – 15/ac	\$7 – 16/ac	\$8 – 15/ac
North	\$7.50 – 15/ac	\$7.50 – 15/ac	\$7.50 – 15/ac

Total reports = 133; Surveyed Summer & Fall 2000

These are survey results only — not recommended rates.

NOTE: * indicates one report received.

Operation	Location	Most Common 1999	Range 2000	Most Common 2000
Seeding — press drill/hoe drill	Alberta	\$6 – 12/ac	\$4 – 17/ac	\$6 – 15/ac
Total reports = 24; Surveyed Summer & Fall 2000				
Seeding — floater truck	South	\$4 – 4.50/ac	\$2.50 – 6/ac	\$4 – 5/ac
	Central	\$4 – 6/ac	\$3.50 – 7/ac	\$4 – 6/ac
	North	\$4 – 4.50/ac	\$4 – 6/ac	\$4 – 6/ac
Total reports = 196; Surveyed Summer & Fall 2000				
Seeding — aerial	Alberta	\$5/ac	\$5 – 9.50/ac	\$5 – 7/ac
Total reports = 20; Surveyed Summer & Fall 2000				
Seeding — no-till drill	Alberta	\$12 – 15/ac	\$6.50 – 16/ac	\$14 – 16/ac
Total reports = 22; Surveyed Summer & Fall 2000				

See cost calculations page 25

Fertilizer Application

Liquid or granular fertilizer application Floater truck	South	\$3.75 – 4.50/ac	\$3.25 – 5.50/ac	\$4 – 5/ac
	Central	\$3.75 – 4.50/ac	\$3 – 6/ac	\$4 – 5/ac
	North	\$4 – 4.50/ac	\$4 – 4.95/ac	\$4/ac
Total reports = 289; Surveyed Summer & Fall 2000				
Liquid or granular fertilizer application				
Fixed-wing aerial	Alberta	\$5/ac	\$4.25 – 7.20/ac	\$5 – 5.75/ac
Total reports = 14; Surveyed Summer & Fall 2000				
Granular fertilizer application				
Truck mount	Alberta	\$2.50 – 5/ac	\$3 – 4.50/ac	\$3.50 – 4.50/ac
Total reports = 27; Surveyed Summer & Fall 2000				
Anhydrous fertilizer application				
Cultivator with cold flow kit	Alberta	\$6.50 – 9.50/ac	\$5.50 – 9/ac	\$6 – 7/ac
Total reports = 7; Surveyed Summer & Fall 2000				

These are survey results only — not recommended rates.
NOTE: * Indicates one report received.

Operation	Location	Most Common 1999	Range 2000	Most Common 2000
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Herbicide Application

Granular herbicide application

Floater truck	Alberta	\$4 - 5/ac	\$3 - 5.50/ac	\$4 - 5/ac
Total reports = 109; Surveyed Summer & Fall 2000				

Liquid or granular herbicide application

Truck mount	Alberta	\$2.50 - 4/ac	\$2.50 - 5.25/ac	\$4 - 5/ac
Total reports = 33; Surveyed Summer & Fall 2000				

Liquid herbicide application

High clearance	South	\$4 - 6/ac	\$3.50 - 9/ac	\$4 - 6/ac
	Central	\$4 - 5.50/ac	\$3.25 - 6.25/ac	\$4 - 6/ac
	North	\$4 - 5/ac	\$4 - 5.25/ac	\$4 - 5.25/ac
Total reports = 286; Surveyed Summer & Fall 2000				

Liquid herbicide application

Fixed-wing aerial	South	\$4 - 5.50/ac	\$4 - 7/ac	\$4 - 5.50/ac
	Central	\$4.50 - 6/ac	\$4 - 6.50/ac	\$4.50 - 5.50/ac
	North	\$4 - 5.50/ac	\$4 - 5.50/ac	\$4 - 5.50/ac
Total reports = 91; Surveyed Summer & Fall 2000				

See cost calculation spraying page 25

Grain Harvesting

Swathing	Alberta	\$6.50 – 10/ac	\$3.50 – 12/ac	\$6 – 8/ac
		\$55 – 75/hr	\$40 – 80/hr	\$40 – 75/hr
Total reports = 36; Surveyed Fall 2000				

Combining — straight cut or pickup header (may be additional cost for fuel)	South - Dryland	\$16 - 18/ac	\$14 - 15/ac	\$14 - 15/ac
		\$125 - 140/hr	\$80 - 125/hr	\$80 - 125/hr
	South - Irrigated	\$18 - 25/ac	\$20 - 25/ac	\$20 - 25/ac
		\$14 - 18/ac	\$13 - 18/ac	\$16/ac
	Central	\$100 - 130/hr	\$65 - 180/hr	\$100 - 145/hr
North		—	\$16/ac*	\$16/ac*
Total reports = 31; Surveyed Fall 2000				

See cost calculations: swathing page 26 and combining page 28

These are survey results only — not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 1999	Range 2000	Most Common 2000
Combining and hauling to bin	South	\$17 – 20/ac	\$14 – 30/ac	\$17 – 20/ac
	Central	\$17 – 21/ac	\$13 – 24/ac	\$16 – 20/ac
		\$120 – 170/hr	\$40 – 250/hr	\$100 – 175/hr
	North	\$100/hr*	\$100 – 150/hr	\$100 – 150/hr
		15/ac*	—	—
Total reports = 37; Surveyed Fall 2000				
Grain drying	Alberta	\$40 – 70/hr	\$45 – 70/hr	\$45 – 70/hr
		\$0.10 – 0.25/bu	\$5 – 12/T	\$5 – 12/T
Total reports = 7; Surveyed Fall 2000				

See cost calculation for grain drying page 29

Grain Hauling

Less than 20 miles	Alberta	\$4 – 6/T	\$4 – 8.50/T	\$4 – 6/T
		\$30 – 45/hr	\$40 – 65/hr	\$40 – 65/hr
		\$50/load	\$100/load*	\$100/load*
21 – 50 miles	Alberta	\$5 – 7/T	\$5 – 11/T	\$6 – 7.50/T
		\$55/hr	—	—
		—	\$120 – 145/load	\$120 – 145/load
51 – 100 miles	Alberta	\$7 – 10/T	\$7 – 12/T	\$8 – 12/T
		\$1.75 – 2/rmi*	—	—
		\$3/lmi*	—	—
101 – 200 miles	Alberta	\$9 – 16/T	\$10 – 19/T	\$12 – 14/T
		—	\$2.75 – 3.25/lmi	\$2.75 – 3.25/lmi
		\$1.75 – 2/rmi*	—	—
Over 200 miles	Alberta	\$16 – 28/T	\$26.50/T*	\$26.50/T*
		—	\$2.92 – 3.50/lmi	\$2.92 – 3.50/lmi
		\$1.35 – 1.60/rmi	—	—
Total Grain Hauling reports = 311; Surveyed Fall 2000				

See cost calculations for trucking on page 29

These are survey results only — not recommended rates.
NOTE: * Indicates one report received.

Operation	Location	Most Common 1999	Range 2000	Most Common 2000
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Haying

Cutting & conditioning hay –	South	\$10 – 15/ac	\$8 – 17/ac	\$10 – 12/ac
Mower conditioner	Central	\$10 – 12/ac 50 – 70/hr	\$7 – 15/ac \$50 – 110/hr	\$8 – 12/ac \$50 – 70/hr
	North	\$7 – 8/ac*	\$7.50 – 8/ac	\$7.50 – 8/ac
Total reports = 64; Surveyed Fall 2000				
Baling small square	Alberta	\$0.40 – 0.45/bale	\$0.30 – 0.65/bale	\$0.35 – 0.45/bale
Total reports = 13; Surveyed Fall 2000				
Stacking and hauling small square	Alberta	\$0.30 – 0.40/bale	\$0.30 – 0.45/bale	\$0.35 – 0.40/bale
Less than 1 mile				
Total reports = 12; Surveyed Fall 2000				
Baling, stacking and hauling small square	Alberta	\$0.75 – 0.85/bale	\$0.65 – 1.05/bale	\$0.70 – 0.85/bale
Less than 1 mile				
Total reports = 11; Surveyed Fall 2000				
Cutting, baling, stacking and hauling small square	Alberta	\$1.50/bale*	\$1.25 – 1.35/bale	\$1.25 – 1.35/bale
Less than 1 mile				
Total reports = 2; Surveyed Fall 2000				
Baling – medium square	Alberta	\$6 – 7/bale	\$6/bale	\$6/bale
– large square		\$10 – 12/bale	\$9 – 12/bale	\$10 – 11/bale
Total reports = 8; Surveyed Fall 2000				
Baling – small round	Alberta	—	\$5/bale	\$5/bale
– medium round		\$5 – 7.50/bale	\$5 – 6.50/bale	\$5 – 6.50/bale
Total reports = 6; Surveyed Fall 2000				
Baling – large round	South	\$7 – 8/bale	\$7 – 9.50/bale	\$7 – 8/bale
	Central	\$5 – 8/bale	\$4.50 – 8.50/bale	\$5 – 8/bale
	North	\$5 – 7/bale	\$7/bale	\$7/bale
Total reports = 94; Surveyed Fall 2000				
Stacking & hauling large round	Alberta	\$1.75 – 2.75/bale	\$1.50 – 2.25/bale	\$1.50 – 2/bale
Less than 5 miles		\$60-hr*	—	—
Total reports = 7; Surveyed Fall 2000				

See cost calculations page 27

These are survey results only — not recommended rates.
NOTE: * Indicates one report received.

Operation	Location	Most Common 1999	Range 2000	Most Common 2000
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Baling, stacking and hauling large round Less than 5 miles	Alberta	\$8.50 – 10/bale	\$7 – 10/bale	\$7 – 10/bale
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Total reports = 7; Surveyed Fall 2000

Hay hauling large round

Up to 18 bales/load	0 – 10 miles	\$2 – 4/bale	\$2 – 4/bale	\$2 – 4/bale
	11 – 25 miles	\$4.50 – 5.50/bale	\$3.60 – 6/bale	\$4.50 – 6/bale
	26 – 60 miles	\$5.50 – 6/bale	\$5.50 – 6.20/bale	\$5.50 – 6.20/bale
		\$50 – 60/hr*	—	—

Total reports = 48; Surveyed Fall 2000

Hay hauling large round

30 or more bales/load	0 – 10 miles	\$3 – 5/bale \$55 – 75/hr	\$3 – 7/bale \$60 – 80/hr	\$3 – 5/bale \$60 – 75/hr
	11 – 25 miles	\$3.75 – 5/bale \$55 – 75/hr	\$4.50 – 10/bale \$60 – 80/hr	\$4.50/bale \$60 – 75/hr
	26 – 60 miles	\$4.50 – 7/bale \$216 – 320/load	\$4.70 – 8/bale \$192 – 300/load	\$6.50 – 8/bale \$192 – 300/load
	Over 60 miles	\$2.75 – 3.50/lmi	\$2.50 – 3.50/lmi	\$3 – 3.50/lmi

Total reports = 59; Surveyed Fall 2000

Silage

Cutting silage – swathing 4 – 12 ac/hr	Alberta	\$1/Ton \$55 – 60/hr \$8 – 10/ac	\$1/Ton \$55 – 85/hr \$8 – 12/ac	\$1/Ton \$55 – 85/hr \$10 – 12/ac
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Total reports = 19; Surveyed Fall 2000

Chopping silage 20 – 75 Ton/hr	Alberta	\$135 – 225/hr \$4 – 5/Ton \$21 – 24/load	\$105 – 275/hr \$3.60 – 6/Ton \$21 – 60/load	\$140 – 225/hr \$4.25 – 6/Ton \$21 – 60/load
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Total reports = 24; Surveyed Fall 2000

Hauling silage

Truck and operator, 1 – 5 mile haul	Alberta	\$40 – 50/hr —	\$40 – 55/hr \$2.25 – 2.50/Ton	\$45 – 55/hr \$2.25 – 2.50/Ton
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Total reports = 32; Surveyed Fall 2000

See cost calculations page 25

These are survey results only — not recommended rates.
NOTE: * indicates one report received.

Operation	Location	Most Common 1999	Range 2000	Most Common 2000
Packing silage				
Tractor with dozer, loader or packer 25 – 60 Tons/hr	Alberta	\$45 – 60/hr \$4 – 10/load \$0.75 – 2/Ton	\$45 – 85/hr — \$1.50/Ton*	\$45 – 65/hr — \$1.50/Ton*
Total reports = 14; Surveyed Fall 2000				
Chopping & hauling silage				
1 – 5 mile haul	Alberta	\$180 – 325/hr \$5.25 – 6.50/Ton \$30 – 38/load	\$150 – 350/hr \$5 – 8.25/Ton \$6 – 13/Tonne	\$150 – 350/hr \$5.25 – 8/Ton \$6 – 13/Tonne
Total reports = 35; Surveyed Fall 2000				
Swathing, chopping & hauling silage				
	Alberta	\$6.50 – 7.25/Ton \$6 – 8.25/Tonne	\$7.50 – 9/Ton —	\$7.50 – 9/Ton —
Total reports = 3; Surveyed Fall 2000				
Swathing, chopping, hauling & packing				
	Alberta	\$7/Tonne*	\$6 – 10/Ton*	\$6 – 10/Ton*
Total reports = 1; Surveyed Fall 2000				
Silage bagging				
Includes bag (customer provides tractor)	Alberta			
	Bag size 10x150	\$1400 – 1500/bag	\$1500/bag*	\$1500/bag*
	Bag size 10x200	\$1600 – 1925/bag	\$2000/bag*	\$2000/bag*
	Bag size 10x250	\$2400/bag*	\$2525/bag*	\$2525/bag*
Total reports = 3; Surveyed Fall 2000				
Silage chopping, hauling & bagging				
Includes bag (customer may need to provide tractor)				
1 – 3 mile haul	Alberta			
	Bag size 10x150	\$2600 – 3000/bag	\$2550/bag*	\$2550/bag*
	Bag size 10x200	\$3400 – 3600/bag	\$3200 – 3450/bag	\$3200 – 3450/bag
	Bag size 10x250	\$4400 – 4800/bag	\$4350 – 5500/bag	\$4350 – 5500/bag
Total reports = 5; Surveyed Fall 2000				

See cost calculations on forage harvesting page 26

These are survey results only — not recommended rates.

NOTE: * Indicates one report received.

NOTE: Ton is an imperial ton. Tonne is a metric tonne.

Land Clearing & Breaking

Brushing & piling or repiling (with a dozer blade)

Alberta			
D6 (140 – 180hp)	\$85/hr	\$80 – 95/hr	\$85 – 95/hr
D7 (180 – 200hp)	\$90 – 105/hr	\$85 – 120/hr	\$95 – 120/hr
D8 (225 – 335hp)	\$100 – 150/hr	\$100 – 150/hr	\$120 – 130/hr

Total reports = 43; Surveyed Fall 2000

Ripping or sub-soiling

Alberta	\$105 – 135/hr	\$115 – 155/hr	\$115 – 155/hr
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Total reports = 8; Surveyed Fall 2000

Rock Picking

Alberta	\$125/hr*	—	—
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Total reports = 0; Surveyed Fall 2000

Discing

Alberta	\$25 – 30/ac	\$11 – 30/ac	\$11 – 30/ac
Higher rates for remote locations or tough terrain	\$75 – 110/hr	\$70 – 163/hr	\$80 – 110/hr

Total reports = 32; Surveyed Fall 2000

Plowing

Alberta	\$50 – 60/ac	\$55/ac*	\$55/ac*
	\$85 – 125/hr	\$70 – 115/hr	\$70 – 115/hr

Total reports = 11; Surveyed Fall 2000

Rototilling

Alberta	\$86 – 220/hr	—	—
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Total reports = 0; Surveyed Fall 2000

Dugout construction, drainage, land leveling

Alberta			
D6 Cat	\$85 – 95/hr	\$80 – 95/hr	\$80 – 95/hr
D7 Cat	\$75 – 105/hr	\$85 – 100/hr	\$85 – 95/hr
D8 Cat	\$100 – 125/hr	\$100 – 158/hr	\$120 – 150/hr
Excavators, scrapers and others	\$75 – 135/hr	\$55 – 160/hr	\$65 – 130/hr

Total reports = 54; Surveyed Fall 2000

These are survey results only — not recommended rates.
NOTE: * Indicates one report received.

Machinery Rental

Anhydrous ammonia applicator – pull type (rental cost with product purchase)	Alberta	\$1 – 4/ac	\$1 – 4.50/ac	\$1.50 – 2.75/ac
	Delivery extra	\$20 – 40/T	\$20 – 60/T	\$20 – 40/T
	Delivery included	\$60 – 90/T	\$80/T	\$80/T

Total reports = 64; Surveyed Summer & Fall 2000

Liquid fertilizer applicator – pull type (rental cost with product purchase)	Alberta	\$1.50 – 2/ac	\$1 – 3.50/ac	\$1 – 2/ac
		\$200/day*	—	—

Total reports = 21; Surveyed Summer & Fall 2000

Granular fertilizer applicator – pull type (rental cost with product purchase)	South	N/C – \$1/ac	N/C – \$1/ac	N/C – \$1/ac
		\$5 – 6/T	\$5 – 10/T	\$5 – 7/T
	Central	N/C – \$1.50/ac	N/C – \$3.25/ac	N/C – \$1.50/ac
		\$5 – 10/T	\$5 – 10/T	\$5 – 10/T
		\$20 – 50/day	\$20 – 100/day	\$20 – 100/day
	North	N/C – \$50/day	N/C – \$100/day	N/C – \$75/day

Total reports = 122; Surveyed Summer & Fall 2000

Granular herbicide applicator – pull type (rental cost with product purchase)	Alberta	\$0.50 – 2.50/day	\$0.50 – 2.50/day	\$0.75 – 1.75/day
		\$50/day	\$50 – 100/day	\$50 – 100/day

Total reports = 77; Surveyed Summer & Fall 2000

Soil Testing

Soil Testing

(lab fees included)

Alberta				
Four nutrients	\$25 – 50/field	\$23 – 100/field	\$25 – 60/field	
With micronutrients	\$45 – 80/field	\$33 – 140/field	\$35 – 80/field	

Total reports = 274; Surveyed Summer & Fall 2000

These are survey results only — not recommended rates.
NOTE: * Indicates one report received.

Grain Processing

Grinding (mixing cost included)	Alberta	\$15 – 20/T	\$12 – 20/T	\$12 – 20/T
Total reports = 32; Surveyed Fall 2000				
Dry rolling (mixing cost included)	Alberta	\$12 – 20/T	\$12 – 20/T	\$12 – 20/T
Total reports = 32; Surveyed Fall 2000				
Steam rolling (mixing cost included)	Alberta	\$15 – 30/T	\$18 – 25/T	\$18 – 20/T
Total reports = 14; Surveyed Fall 2000				
Pelleting (mixing cost included)	Alberta	\$27/T	\$27 – 30/T	\$27 – 30/T
Total reports = 14; Surveyed Fall 2000				
Processed grain delivery 7 – 13 tonne load	Alberta	\$6.50 – 7.50/T	\$5 – 8.80/T	\$5 – 8.80/T
0 – 35 miles		— \$50/hr*	\$35 – 90/load —	\$35 – 90/load —
Total reports = 30; Surveyed Fall 2000				

These are survey results only — not recommended rates.
NOTE: * Indicates one report received.

Livestock Feeding

Feeding & backgrounding calves

Alberta			
Yardage	\$0.15 – 0.18/day	\$0.13 – 0.19/day	\$0.14 – 0.16/day
Bedding charge	\$18 – 30/lg bale	\$20 – 30/lg bale	\$25/lg bale
	\$0.05 – 0.09/hd/day	\$0.08 – 0.10/hd/day	\$0.08 – 0.10/hd/day
Death loss	0.5 – 1.5%	0.3 – 2%	1 – 2%
Total cost/lb gain	\$0.60 – 0.75/lb	\$0.48 – 0.95/lb	\$0.55 – 0.70/lb

Total reports = 25; Surveyed Spring 2000

Finishing calves

Alberta			
Yardage	\$0.14 – 0.18/day	\$0.12 – 0.19/day	\$0.12 – 0.18/day
Bedding charge	\$18 – 24/lg bale	\$14 – 25/lg bale	\$25/lg bale
	\$0.05/hd/day	\$0.07 – 0.10/hd/day	\$0.10/hd/day
Death loss	0.05 – 1.5%	0.40 – 3.0%	1.2 – 2.0%
Total cost/lb gain	\$0.60 – 0.68/lb	\$0.50 – 0.65/lb	\$0.54 – 0.60/lb

Total reports = 30; Surveyed Spring 2000

Finishing yearlings

Alberta			
Yardage	\$0.14 – 0.18/day	\$0.12 – 0.19/day	\$0.12 – 0.16/day
Bedding charge	\$13 – 24/lg bale	\$20 – 30/lg bale	\$25/lg bale
	\$0.05 – 0.06/hd/day	\$0.07 – 0.10/hd/day	\$0.08 – 0.10/hd/day
Death loss	0.25 – 1.0%	0.25 – 1.0%	0.50 – 0.80%
Total cost/lb gain	\$0.55 – 0.65/lb	\$0.44 – 0.65/lb	\$0.50 – 0.60/lb

Total reports = 24; Surveyed Spring 2000

Overwintering cows

Alberta			
Total cost/day	\$1.25 – 1.50/hd/day	\$0.86 – 1.60/hd/day	\$1.20 – 1.30/hd/day

Total reports = 3; Surveyed Spring 2000

Jan. 2001 data will be available in the "Custom Rates Survey Livestock Operations" in March 2001

These are survey results only — not recommended rates.

NOTE: * Indicates one report received.

NOTE: ** Does not include interest.

NOTE: Ton is an imperial ton; Tonne is a metric tonne.

Livestock Hauling

Possum belly liner (50,000 – 65,000 lb) lmi=loaded mile	Alberta			
	0 – 20 miles	\$140 – 200/load \$60 – 95/hr	\$120 – 700/load \$70 – 80/hr	\$190 – 350/load \$70 – 80/hr
	21 – 50 miles	\$175 – 295/load \$3.25 – 4/lmi	\$120 – 760/load —	\$195 – 400/load —
	51 – 100 miles	\$300 – 445/load \$3 – 4/lmi	\$120 – 800/load \$3.25 – 4.75/lmi	\$195 – 460/load \$3.50 – 4.50/lmi
	100+ miles	\$2.60 – 3.50/lmi \$1.25 – 1.65/cwt \$380 – 550/load	\$2.60 – 4/lmi \$1.40/cwt* \$160 – 435/load	\$3 – 3.80/lmi \$1.40/cwt* \$160 – 435/load

Total reports = 116; Surveyed Fall 2000

Straight liner, body job and gooseneck (16,000 – 42,000 lb) lmi=loaded mile	Alberta			
		\$300/load*	\$90 – 300/load	\$150/load
		\$2.40 – 2.60/lmi	\$2.65 – 3/lmi	\$2.65 – 3/lmi
		\$1.40/cwt \$50 – 55/hr	\$0.90 – 1.45/cwt \$55/hr*	\$1.35 – 140/cwt \$55/hr*

Total reports = 27; Surveyed Fall 2000

Hog hauling (dcwt=dressed hundredweight)	Alberta			
		\$2.65/hog* \$1.60/cwt*	\$2.25/dcwt —	\$2.25/dcwt —

Total reports = 3; Surveyed Fall 2000

These are survey results only — not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 1999	Range 2000	Most Common 2000
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Corral Cleaning

Corral cleaning

	Alberta			
Loader, 4 spreaders, 5 operators		\$285 – 315/hr	\$280 – 350/hr	\$290 – 325/hr
Loader, 3 spreaders, 4 operators		\$180 – 255/hr	\$200 – 272/hr	\$235 – 265/hr
Loader, 2 spreaders, 3 operators		\$150 – 185/hr	\$130 – 200/hr	\$165 – 200/hr
Loader, 1 spreader, 1 operator		\$65 – 86/hr	\$90/hr*	\$90/hr*
Loader only, 1 operator		\$45 – 75/hr	\$40 – 115/hr	\$60 – 90/hr
Total reports = 269; Surveyed Fall 2000				

Fencing

Barbed wire fence construction

	Alberta	\$1200 – 1800/mi	\$600 – 2000/mi	\$1400 – 1800/mi
		\$65 – 80/hr	\$60 – 80/hr	\$60 – 80/hr
		\$1.50 – 1.80/metre	\$1 – 7/metre	\$1 – 3.90/metre
Labour & equipment		\$1000 – 1500/km*	\$1100/km*	\$1100/km*
Total reports = 55; Surveyed Fall 2000				

High tensile wire fence construction

Includes labour, some material & equipment	Alberta	\$70/hr*	\$65 – 80/hr	\$80/hr
		\$0.30/ft*	\$6 – 9/metre	\$6 – 9/metre
Total reports = 27; Surveyed Fall 2000				

Post pounding

Labour & equipment	Alberta	\$65 – 100/hr	\$55 – 80/hr	\$60 – 80/hr
Total reports = 27; Surveyed Fall 2000				

Barbed wire fence removal

Labour & equipment	Alberta	\$500 – 750/mi	\$600 – 650/mi*	\$600 – 650/mi*
		\$65 – 100/hr	\$55 – 80/hr	\$60 – 80/hr
			\$1/metre	\$1/metre
Total reports = 31; Surveyed Fall 2000				

These are survey results only — not recommended rates.
NOTE: * Indicates one report received.

Land Leasing

Cash rent — cropland	Location	Average 1999	Range 2000	Most Common 2000	Average 2000
	South — Irrigated	\$84/ac	\$29.10 — 225/ac	\$60 — 115/ac	\$85.34/ac
	South — Dryland	\$24.71/ac	\$8.63 — 45/ac	\$25 — 40/ac	\$26.91/ac
	Central	\$28.39/ac	\$6 — 80/ac	\$20 — 45/ac	\$32.37/ac
	North	\$16.46/ac	\$11.11 — 35/ac	\$15 — 20/ac	\$20.19/ac

Total reports = 307; Surveyed Spring 2000

Length of Lease — cropland	Cash rent		Crop share	
1	65	21	31	49
2	7	2	1	2
3	44	15	6	10
4	7	2	0	0
5	152	50	4	6
6+	30	10	21	33
Total	307	100	63	100

Total reports 370; Surveyed Spring 2000

Type of Lease — cropland	Cash rent		Crop share	
South	48	80	12	20
Central	258	85	45	15
North	11	65	6	35

Total reports 370; Surveyed Spring 2000

These are survey results only — not recommended rates.

Cropshare rental	cropland	Landlord	Tenant	No. of leases	% Reporting	Notes
Alberta						
South	1/4 : 3/4			2	17	Tenant pays all but taxes in 8 of 12 agreements
	1/3 : 2/3			10	83	
Central	1/4 : 3/4			9	20	Tenant pays all but taxes in 16 of 45 agreements
	1/3 : 2/3			35	78	
	1/2 : 1/2			1	2	
North	1/5 : 4/5			1	17	Tenant pays all but taxes in 5 of 6 agreements
	1/4 : 3/4			5	83	

Total reports 63; Surveyed Spring 2000

Cash rent	private pasture	Location	Most Common 1999	Range 2000	Most common 2000
South			\$18 - 20/AUM	\$7.50 - 19.00/AUM	\$15 - 17/AUM
			\$15/ac*	\$0.70/hd/day	\$0.70/hd/day
Central			\$10 - 15/AUM	\$10 - 25/AUM	\$15 - 22/AUM
			\$12 - 15/hd/mo	\$5 - 17/hd/mo	\$12/hd/mo
North			—	—	—

Total reports 99; Surveyed Spring 2000

Crown land	Location	Total Acreage	Rate AUM 1999	Rate AUM 2000
South		3,100,000	\$2.79	\$2.79
Central		800,000	\$2.32	\$2.32
North		1,700,000	\$1.39	\$1.39

Surveyed Spring 2000

These are survey results only — not recommended rates.
NOTE: * Indicates one report received.

Alberta Average Farm Input Prices

Agricultural Input Prices

The following average prices are based on prices quoted the first week of each month at 18 centres across Alberta. These prices are intended as a guide only. Actual current prices may differ.

Items	Average 1998	Average 1999	Average 2000
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Building Supplies

Lumber 2x6 spruce, M	\$ 650.38	\$ 620.59	\$ 570.01
Sheathing, ply., spruce, 3/8", 4'x8' sht	\$ 14.95	\$ 16.87	\$ 16.46
Cement, 40 kg	\$ 8.72	\$ 8.84	\$ 9.11
Barn paint, oil base, 20 litres	\$ 68.68	\$ 70.68	\$ 70.87
Pipe, plastic, 3/4", 75 psi., 100' coil	\$ 24.50	\$ 24.15	\$ 24.19
Rods, re-enforcing 1/2", 6 metres	\$ 4.24	\$ 4.12	\$ 3.93
Barbed wire, 12 gauge, double strand	\$ 41.97	\$ 42.42	\$ 43.18

Machinery Repairs

Truck tires, 1st line, p235-75r, each	\$ 117.91	\$ 120.17	\$ 123.54
Battery, 525 cranking amp, each	\$ 74.70	\$ 75.46	\$ 77.63
V-belt, 1/2" x 70", ea.	\$ 10.04	\$ 10.24	\$ 9.79
Antifreeze, 4 litres	\$ 9.20	\$ 8.72	\$ 9.46
Mech. repairs, per hour	\$ 52.64	\$ 54.02	\$ 56.55

Crop Supplies

Baler twine, sisal 9000'	\$ 33.61	\$ 34.54	\$ 35.48
Fertilizer, 46-0-0, tonne, bulk	\$ 286.77	\$ 271.82	\$ 291.61
Fertilizer, 11-51-0, tonne, bulk	\$ 415.90	\$ 411.96	\$ 393.89
Fertilizer, 82-0-0, tonne, bulk (applicator inc.)	\$ 499.21	\$ 434.51	\$ 467.53
2-4d low volatile, 20 litres	\$ 100.52	\$ 105.30	\$ 112.02
Avadex bw, liquid, 5 gallon	\$ 202.38	\$ 199.01	\$ 190.95
Trifluralin, treflan, 17 litre case	\$ 236.66	\$ 240.64	\$ 247.78
Seed: wheat, 100 kg., bulk	\$ 28.89	\$ 27.56	\$ 28.06
Seed: barley, 100 kg., bulk	\$ 29.66	\$ 27.22	\$ 26.75
Seed: canola, treated, 100 kg., bagged	\$ 306.22	\$ 370.20	\$ 390.86

Feeds

Calf starter supp., (20 - 24%), 25 kg.	\$ 10.64	\$ 10.05	\$ 9.79
Dairy supp., (32%), 25 kg	\$ 11.85	\$ 11.10	\$ 11.00
Hog supp., (40%), 25 kg	\$ 13.67	\$ 12.45	\$ 12.37
Broiler grower, (18 - 20%), 25 kg	\$ 9.81	\$ 9.57	\$ 9.65
Cattle mineral, 25 kg.	\$ 19.23	\$ 19.43	\$ 19.82
Feed barley, no. 1, (farm gate), bu	\$ 2.27	\$ 2.10	\$ 2.02
Feed wheat, no. 1, (farm gate), bu	\$ 2.96	\$ 2.82	\$ 2.68
Hay, good quality baled, ton	\$ 77.98	\$ 73.74	\$ 75.74

Livestock Supplies

Penicillin, injectable, 100 cc.	\$ 7.00	\$ 7.25	\$ 7.51
Vitamin A D E, injectable, 100 cc.	\$ 9.11	\$ 9.52	\$ 10.22

Fuel and Oil

Purple gas, 100 litres (minus prov. rebate only)	\$ 41.14	\$ 41.29	\$ 52.63
Diesel fuel, 100 litres, (minus prov. rebate only)	\$ 29.66	\$ 28.87	\$ 40.11
Propane, bulk, 100 litres	\$ 25.59	\$ 25.00	\$ 32.30
Natural gas, GJ.	\$ 2.91	\$ 3.63	\$ 4.54
Oil, for diesel engines, 5 litres	\$ 9.58	\$ 9.68	\$ 9.90

Other

Farm labour, per month, without board	\$ 1,666.12	\$ 1,693.20	\$ 1,829.85
Tractor 100 HP/UP	\$ 79,237.70	\$ 80,841.84	\$ 83,195.81
Tractor 170 HP/UP	\$ 146,289.30	\$ 150,486.51	\$ 153,865.13
Combine, self-prop.	\$ 197,730.29	\$ 209,658.06	\$ 222,402.01
Chisel plow 23' - 27'	\$ 22,648.89	\$ 24,152.84	\$ 25,106.31
Round baler, pull type	\$ 31,999.35	\$ 33,804.92	\$ 34,597.52
Double disc, hvy duty 19' - 21'	\$ 23,837.59	\$ 24,948.85	\$ 27,215.28
Truck, 1/2 ton, Ford/Chev	\$ 21,996.02	\$ 22,975.70	\$ 24,154.03

Source: Alberta Agriculture, Food and Rural Development, Statistics and Data Development Unit

Farm Machinery Costs

How to Use the Farm Machinery Cost Guide

- If you are a **full-time custom operator**, then use the Total Machine Cost + Labor + Profit for estimating a charge. Be sure to adjust fixed costs if your annual hours of use differ much from those quoted.

Note: Labor and profit margin are not included in the tables on pages 22 through 30.

- If you are doing custom work on a **good neighbor payment basis**, then it may not be necessary to recover all the fixed costs of owning the machine since these costs represent an annual cost incurred whether or not custom work is done. However, the rate should cover all variable costs that include an allowance for repairs. Labor and profit margin can be adjusted to meet each situation.
- If you plan to do custom work in addition to your own work, so as to partly justify the ownership of a larger machine, then the custom charge should cover variable costs, labor, a profit margin **plus** a proportion of fixed costs calculated as follows:

Proportion of Fixed Costs =

$$\text{Hours of Custom Work} \times \left[\frac{\text{Total fixed costs}}{\text{Total annual hours of use}} \right]$$

- If you are renting out machinery, then you will wish to cover fixed costs at least and those variable costs such as lubrication and repairs that may not be already covered by the renter.
- If you wish to assess a rate for a full operation such as silage making, which requires several machines, then add the hourly costs of each activity, making sure there is neither omission nor duplication. Use the worksheets provided in part three. The purchase cost estimates are based on average cash prices as of December 1999 for each class of machine. These estimates represent current replacement costs that should be budgeted and charged for, even if you do custom work with older machines, unless the older machine will not do a comparable job.

Key assumptions

Estimated years of life, annual hours of use and annual repair rates are specified for each type of machine. The salvage value of each machine is listed as a per cent of the new price.

Diesel fuel is charged at \$0.40 per litre and propane at \$0.36 per litre. Fuel costs vary throughout the year with supply and demand.

Return on investment is calculated using a Bank of Canada 90-day T-bill rate of 5.5 per cent with an additional allowance for risk of 6 per cent. Inflation was included at a 2.0 per cent rate. Income tax considerations have not been included in the calculations.

Other considerations

- Favorable or unfavorable working conditions, such as size of job, distance, access, topography, soil type and possible downtime, may modify the guide figures. Per hour charges allow for some of these situations.
- Different soils and topography may require power units of a different size than those shown here.
- Charges per unit of output such as per acre, per bushel or per bale, defined on work rates per hour, may be quite different from those quoted. Per hour charging overcomes some of these uncertainties.
- You can adjust the labor charge according to your actual cost of hired work or the opportunity cost of your own labor.
- If your experience and farm records suggest that other costs and assumptions would suit your situation, then recalculate using the worksheets in part three or use the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>
- Earlier and faster may be cheaper. There are costs attached to late completion of operations. The rewards for timely, quality work quickly completed by large machines are only earned if the support system, including seed and fertilizer supplies and grain trucking, is well organized.

Tractor — 2WD

Years life = 10
Annual use (Hrs) = 200, 400*, 600
Annual repair rate = 3% of Replacement cost
Salvage Value = 50% Replacement cost

P.T.O. H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labour Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
40 HP without cab	200	8	31,650	21.45	8.43	29.88
	400			10.73	6.05	16.78
	600			7.15	5.26	12.41
60 HP without cab	200	13	39,700	26.91	11.94	38.84
	400			13.45	8.96	22.41
	600			8.97	7.97	16.93
80 HP	200	17	61,175	41.46	17.00	58.46
	400			20.73	12.41	33.14
	600			13.82	10.88	24.70
100 HP	200	22	80,975	54.88	22.27	77.15
	400			27.44	16.19	43.64
	600			18.29	14.17	32.46
120 HP	200	28	93,975	63.70	26.98	90.67
	400			31.85	19.93	51.78
	600			21.23	17.58	38.81
150 HP	200	32	108,450	73.51	30.99	104.49
	400			36.75	22.85	59.61
	600			24.50	20.14	44.64
180 HP	200	22	126,863	85.99	29.15	115.14
	400			42.99	19.63	62.63
	600			28.66	16.46	45.13
215 HP including MFD	200	42	149,425	101.28	41.73	143.01
	400			50.64	30.53	81.17
	600			33.76	26.79	60.55

* This Annual Hours Use figure is typical.

** FWA.

MFD approx. 10,000 under 100 HP

approx. 15,000 over 100 HP

Tractor — 4WD

Years life = 12
 Annual use (Hrs) = 200, 400*, 600
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

Engine H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labour Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
110 HP Bi-directional	200	22	107,000	68.21	26.17	94.38
	400			34.11	18.15	52.25
	600			22.74	15.47	38.21
240 HP	200	40	134,033	85.45	38.50	123.95
	400			42.72	28.45	71.18
	600			28.48	25.10	53.58
275 HP	200	53	140,000	89.25	45.38	134.63
	400			44.63	34.88	79.51
	600			29.75	31.38	61.13
300 HP	200	58	157,867	100.64	50.36	151.00
	400			50.32	38.52	88.84
	600			33.55	34.57	68.12
350 HP	200	62	180,083	114.80	55.53	170.34
	400			57.40	42.03	99.43
	600			38.27	37.52	75.79
425 HP	200	85	205,333	130.90	69.90	200.80
	400			65.45	54.50	119.95
	600			43.63	49.37	93.00

* This Annual Hours Configuration is typical.

** Priced without PTO.

Tractor — 2WD

Years life = 10
 Annual use (Hrs) = 200, 400*, 600
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

P.T.O. H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labour Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
40 HP without cab	200	8	31,650	21.45	8.43	
	400			10.73	6.05	
	600			7.15	5.26	
60 HP without cab	200	13	39,700	26.91	11.94	
	400			13.45	8.96	
	600			8.97	7.97	
80 HP	200	17	61,175	41.46	17.00	
	400			20.73	12.41	
	600			13.82	10.88	
100 HP	200	22	80,975	54.88	22.27	
	400			27.44	16.19	
	600			18.29	14.17	
120 HP	200	28	93,975	63.70	26.98	
	400			31.85	19.93	
	600			21.23	17.58	
150 HP	200	32	108,450	73.51	30.99	
	400			36.75	22.85	
	600			24.50	20.14	
180 HP	200	22	126,863	85.99	29.15	
	400			42.99	19.63	
	600			28.66	16.46	
215 HP including MFD	200	42	149,425	101.28	41.73	
	400			50.64	30.53	
	600			33.76	26.79	

* This Annual Hours Used figure is typical.

** FWA

MFWD approx. 10,000 under 100 HP

approx. 15,000 over 100 HP

Tractor — 4WD

Years life = 12
 Annual use (Hrs) = 200, 400*, 600
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

Engine H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labour Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
110 HP Bi-directional	200	22	107,000	68.21	26.17	
	400			34.11	18.15	
	600			22.74	15.47	
240 HP	200	40	134,033	85.45	38.50	
	400			42.72	28.45	
	600			28.48	25.10	
275 HP	200	53	140,000	89.25	45.38	
	400			44.63	34.88	
	600			29.75	31.38	
300 HP	200	58	157,867	100.64	50.36	
	400			50.32	38.52	
	600			33.55	34.57	
350 HP	200	62	180,083	114.80	55.53	
	400			57.40	42.03	
	600			38.27	37.52	
425 HP	200	85	205,333	130.90	69.90	
	400			65.45	54.50	
	600			43.63	49.37	

* This Annual Hours Used figure is typical.

** Priced without PTO.

Cultivation Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acres/hr)	(\$/acre)
Plows	Life = 15	Annual hours use = 150 Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost			
3 x 16" 3-point	60	8,100	13.45	8.96	7.18	3.24		1.7	
6 x 18" Trailing	180	20,900	42.99	19.63	18.54	8.36		3.8	
8 x 16" Trailing	180	27,500	42.99	19.63	24.39	11.00		4.5	
10 x 18" Trailing	275	38,800	44.63	34.88	34.41	15.52		6.4	
Hd cultivators	Life = 15	Annual hours use = 250 Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost			
14' Single	80	13,700	20.73	12.41	7.29	3.29		5.9	
25' Wing	150	21,167	36.75	22.85	11.26	5.08		10.6	
31' Wing	180	25,967	42.99	19.63	13.82	6.23		13.2	
42" Wing	275	32,490	44.63	34.88	17.29	7.80		17.8	
60" Wing	350	57,233	57.40	42.03	30.46	13.74		25.5	
Field cultivators	Life = 15	Annual hours use = 250 Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost			
24" Wing	100	26,250	27.44	16.19	13.97	6.30		10.2	
32" Wing	150	28,533	36.75	22.85	15.18	6.85		13.6	
42" Wing	180	33,933	42.99	19.63	18.06	8.14		17.8	
Discs - tandem HD	Life = 15	Annual hours use = 150 Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost			
16" Single	120	16,933	31.85	19.93	15.02	6.77		6.8	
24" Wing	180	29,033	42.99	19.63	25.75	11.61		10.2	
30" Wing	240	41,000	42.72	28.45	36.37	16.40		12.7	
12" Heavy offset	150	17,000	36.75	22.85	15.08	6.80		5.1	
16" Heavy offset	180	20,700	42.99	19.63	18.36	8.28		6.8	
Rototillers	Life = 15	Annual hours use = 100 Annual repair rate = 6% replacement cost				Salvage value = 10% replacement cost			
5" Rotor	80	2,850	20.73	12.41	3.79	1.71		1.3	
6" Rotor	100	3,500	27.44	16.19	4.66	2.10		1.5	
8" Rotor	120	3,700	31.85	19.93	4.92	2.22		2.0	

400. Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Cultivation/Seeding/Spraying Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Harrows	Life = 15	Annual hours use = 40		Annual repair rate = 2% replacement cost			Salvage value = 10% replacement cost		
Spring tooth 50'	100	9,500	27.44	16.19	31.60	4.75		29.7	
Spring tooth 70'	150	13,500	36.75	22.85	44.90	6.75		41.6	
Harrow packers 50'	150	20,000	36.75	22.85	66.52	10.00		21.2	
Harrow packers 70'	240	25,233	42.72	28.45	83.93	12.62		29.7	
Heavy Harrow 50'	180	20,000	42.99	19.63	66.52	10.00		21.2	
Heavy Harrow 70'	180	24,333	42.99	19.63	80.93	12.17		29.7	
Seed Drills	Life = 6	Annual hours use = 100		Annual repair rate = 2% replacement cost			Salvage value = 50% replacement cost		
End wheel 12'	60	12,750	13.45	8.96	21.56	2.55		4.4	
Hoe drill 12'	80	18,400	20.73	12.41	31.11	3.68		4.4	
Zero/Min. till 10'	80	36,350	20.73	12.41	61.46	7.27		3.6	
Air seeder w/cult.	Life = 6	Annual hours use = 150		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
30' Air seeder	180	71,325	42.99	19.63	80.39	14.27		10.9	
40' Air seeder	300	82,450	50.32	38.52	92.93	16.49		14.5	
50' Air seeder	350	105,825	57.40	42.03	119.28	21.17		18.2	
Air Drills	Life = 6	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
30' Air drill	240	82,225	42.72	28.45	139.02	24.67		10.9	
40' Air drill with packer wheels	300	102,625	50.32	38.52	173.51	30.79		14.5	
50' Air drill with packer wheels	425	129,475	65.45	54.50	218.91	38.84		18.2	
Sprayer (trailer)	Life = 15	Annual hours use = 50		Annual repair rate = 3% replacement cost			Salvage value = 10% replacement cost		
625 gallon 80' low volume air assist	80	30,000	20.73	12.41	71.85	18.00		30.5	
800 gallon 80'	150	26,350	36.75	22.85	63.11	15.81		40.7	
1200 gallon 110'	150	35,000	36.75	22.85	83.83	21.00		56.0	
Sprayer (SP)	Life = 10	Annual hours use = 200		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
400 gallon 70' high clearance	125	99,000	67.10	22.16	—	—		50.9	
600 gallon 70' high clearance	135	133,060	90.19	28.33	—	—		50.9	
800 gallon 90' high clearance	175	200,800	136.10	41.62	—	—		65.5	
1000 gallon 120'	250	248,480	168.42	51.90	—	—		110.0	

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Cultivation Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Plows	Life = 15	Annual hours use = 150		Annual repair rate = 6% replacement cost			Salvage value = 10% replacement cost		
3 x 16" 3-point	60	8,100	13.45	8.96	7.18	3.24	32.84	1.7	19.35
6 x 18" Trailing	180	20,900	42.99	19.63	18.54	8.36	89.53	3.8	23.45
8 x 16" Trailing	180	27,500	42.99	19.63	24.39	11.00	98.02	4.5	21.65
10 x 18" Trailing	275	38,800	44.63	34.88	34.41	15.52	129.44	6.4	20.34
Hd cultivators	Life = 15	Annual hours use = 250		Annual repair rate = 6% replacement cost			Salvage value = 10% replacement cost		
14' Single	80	13,700	20.73	12.41	7.29	3.29	43.72	5.9	7.36
25' Wing	150	21,167	36.75	22.85	11.26	5.08	75.95	10.6	7.16
31' Wing	180	25,967	42.99	19.63	13.82	6.23	82.68	13.2	6.29
42" Wing	275	32,490	44.63	34.88	17.29	7.80	104.59	17.8	5.87
60" Wing	350	57,233	57.40	42.03	30.46	13.74	143.62	25.5	5.64
Field cultivators	Life = 15	Annual hours use = 250		Annual repair rate = 6% replacement cost			Salvage value = 10% replacement cost		
24" Wing	100	26,250	27.44	16.19	13.97	6.30	63.90	10.2	6.28
32" Wing	150	28,533	36.75	22.85	15.18	6.85	81.64	13.6	6.01
42" Wing	180	33,933	42.99	19.63	18.06	8.14	88.83	17.8	4.99
Discs – tandem HD	Life = 15	Annual hours use = 150		Annual repair rate = 6% replacement cost			Salvage value = 10% replacement cost		
16" Single	120	16,933	31.85	19.93	15.02	6.77	73.57	6.8	10.84
24" Wing	180	29,033	42.99	19.63	25.75	11.61	99.99	10.2	9.82
30" Wing	240	41,000	42.72	28.45	36.37	16.40	123.94	12.7	9.74
12" Heavy offset	150	17,000	36.75	22.85	15.08	6.80	81.49	5.1	16.01
16" Heavy offset	180	20,700	42.99	19.63	18.36	8.28	89.27	6.8	13.15
Rototillers	Life = 15	Annual hours use = 100		Annual repair rate = 6% replacement cost			Salvage value = 10% replacement cost		
5' Rotor	80	2,850	20.73	12.41	3.79	1.71	38.64	1.3	30.36
6' Rotor	100	3,500	27.44	16.19	4.66	2.10	50.39	1.5	32.99
8' Rotor	120	3,700	31.85	19.93	4.92	2.22	58.92	2.0	28.93

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Cultivation/Seeding/Spraying Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Harrows	Life = 15	Annual hours use = 40	Annual repair rate = 2% replacement cost				Salvage value = 10% replacement cost		
Spring tooth 50'	100	9.500	27.44	16.19	31.60	4.75	79.98	29.7	2.69
Spring tooth 70'	150	13.500	36.75	22.85	44.90	6.75	111.26	41.6	2.68
Harrow packers 50'	150	20.000	36.75	22.85	66.52	10.00	136.13	21.2	6.42
Harrow packers 70'	240	25.233	42.72	28.45	83.93	12.62	167.72	29.7	5.65
Heavy Harrow 50'	180	20.000	42.99	19.63	66.52	10.00	139.15	21.2	6.56
Heavy Harrow 70'	180	24.333	42.99	19.63	80.93	12.17	155.73	29.7	5.24
Seed Drills	Life = 6	Annual hours use = 100	Annual repair rate = 2% replacement cost				Salvage value = 50% replacement cost		
End wheel 12'	60	12.750	13.45	8.96	21.56	2.55	46.52	4.4	10.66
Hoe drill 12'	80	18.400	20.73	12.41	31.11	3.68	67.93	4.4	15.57
Zero Min. till 10'	80	36.350	20.73	12.41	61.46	7.27	101.87	3.6	28.01
Air seeder w/cult.	Life = 6	Annual hours use = 150	Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
30' Air seeder	180	71.325	42.99	19.63	80.39	14.27	157.29	10.9	14.42
40' Air seeder	300	82.450	50.32	38.52	92.93	16.49	198.26	14.5	13.63
50' Air seeder	350	105.825	57.40	42.03	119.28	21.17	239.87	18.2	13.19
Air Drills	Life = 6	Annual hours use = 100	Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
30' Air drill	240	82.225	42.72	28.45	139.02	24.67	234.87	10.9	21.53
40' Air drill with packer wheels	300	102.625	50.32	38.52	173.51	30.79	293.14	14.5	20.15
50' Air drill with packer wheels	425	129.475	65.45	54.50	218.91	38.84	377.70	18.2	20.77
Sprayer (trailer)	Life = 15	Annual hours use = 50	Annual repair rate = 3% replacement cost				Salvage value = 10% replacement cost		
625 gallon 80' low volume air assist	80	30.000	20.73	12.41	71.85	18.00	122.99	30.5	4.03
800 gallon 80'	150	26.350	36.75	22.85	63.11	15.81	138.53	40.7	3.40
1200 gallon 110'	150	35.000	36.75	22.85	83.83	21.00	164.43	56.0	2.94
Sprayer (SP)	Life = 10	Annual hours use = 200	Annual repair rate = 3% replacement cost				Salvage value = 50% replacement cost		
400 gallon 70' high clearance	125	99.000	67.10	22.16	—	—	89.27	50.9	1.75
600 gallon 70' high clearance	135	133.060	90.19	28.33	—	—	118.52	50.9	2.33
800 gallon 90' high clearance	175	200.800	136.10	41.62	—	—	177.72	65.5	2.71
1000 gallon 120'	250	248.480	168.42	51.90	—	—	220.32	110.0	2.00

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Forage Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Swather (SP)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost			
Diesel with 20' header		75,150	117.96	27.15	—	—	145.10	8.5	17.07
Swather (pull-type)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost			
21' Grain	80	17,720	20.73	12.41	29.96	5.32	68.42	8.9	7.89
25' Grain	80	19,180	20.73	12.41	32.43	5.75	71.32	10.7	6.67
Disk mower	Life = 6	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost			
15' SP Diesel		90,750	153.43	41.95	—	—	195.38	6.4	30.53
9'	80	23,050	20.73	12.41	38.97	6.92	79.03	3.8	20.70
12'	100	26,775	27.44	16.19	45.27	8.03	96.94	5.1	19.04
Mower conditioner	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost			
14' SP Diesel		79,933	125.46	31.50	—	—	156.97	5.9	26.43
9' PTO	80	16,300	20.73	12.41	25.58	4.89	63.61	3.8	16.66
12' PTO	100	22,925	27.44	16.19	35.98	6.88	86.50	5.1	16.99
14' PTO	120	26,200	31.85	19.93	41.12	7.86	100.76	5.9	16.96
Rotary mowers	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost			
10' Heavy duty	100	11,750	27.44	16.19	18.44	3.53	65.60	4.2	15.46
20' Wing type	150	25,900	36.75	22.85	40.65	7.77	108.03	8.5	12.73
Rake	Life = 15	Annual hours use = 50		Annual repair rate = 2% replacement cost		Salvage value = 10% replacement cost			
10' Rotary	40 without cab	6,500.0	10.73	6.05	17.30	2.60	36.68	4.2	8.64
Forage harvester	Life = 6	Annual hours use = 400		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost			
SP 350 HP		242,500	102.50	46.71	—	—	149.21	8.5	17.55
SP 450 HP		271,000	114.55	61.73	—	—	176.27	8.5	20.74
20" Pulltype	150	37,600	36.75	22.85	15.89	2.82	78.32	6.8	11.54
24" Pulltype	240	47,400	42.72	28.45	20.04	3.56	94.77	8.5	11.17
Dump wagon	Life = 15	Annual hours use = 200		Annual repair rate = 2% replacement cost		Salvage value = 10% replacement cost			
Small (700 cu ft)		13,500	—	—	8.98	1.35	10.33	8.5	1.22
Medium (900 cu ft)		18,500	—	—	13.21	1.85	15.06	8.5	1.77
Large (1200 cu ft) conveyor type		21,000	—	—	13.97	2.10	16.07	8.5	1.89

NOTE: Hours of Tractor Use figures are used to determine above Power Unit costs.

Baling Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost			Twine Cost (\$/bale)	Total Cost (\$/bale)
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)		
Balers (standard)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost					
Small 14" x 18" without cab	60	22.225	13.45	8.96	34.88	6.67	63.96	200	0.32	0.04	0.36
Large 16" x 18"	80	25.300	20.73	12.41	39.71	7.59	80.44	300	0.27	0.04	0.31
Large round	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost					
4' x 6' Bale	80	26.675	20.73	12.41	41.87	8.00	83.01	18	4.61	0.40	5.01
5' x 6' Bale	100	32.762	27.44	16.19	51.42	9.83	104.89	16	6.56	0.40	6.96
Large square	Life = 10	Annual hours use = 300		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost					
1500 - 2000 lb Bale	150	93.866	36.75	22.85	42.41	9.39	111.41	10	11.14	0.20	11.34
Bale wagons	Life = 12	Annual hours use = 150		Annual repair rate = 3% replacement cost		Salvage value = 50% replacement cost					
SP 160 Bale		140.000	119.00	45.76	—	—	164.76	400	0.41	—	0.41
Pull 104 Bale	120	35.000	31.85	19.93	29.75	7.00	88.53	240	0.37	—	0.37

4000 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Forage Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Swather (SP)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
Diesel with 20' header		75,150	117.96	27.15	—	—		8.5	
Swather (pull-type)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
21' Grain	80	17,720	20.73	12.41	29.96	5.32		8.9	
25' Grain	80	19,180	20.73	12.41	32.43	5.75		10.7	
Disk mower	Life = 6	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
15' SP Diesel		90,750	153.43	41.95	—	—		6.4	
9'	80	23,050	20.73	12.41	38.97	6.92		3.8	
12'	100	26,775	27.44	16.19	45.27	8.03		5.1	
Mower conditioner	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
14' SP Diesel		79,933	125.46	31.50	—	—		5.9	
9' PTO	80	16,300	20.73	12.41	25.58	4.89		3.8	
12' PTO	100	22,925	27.44	16.19	35.98	6.88		5.1	
14' PTO	120	26,200	31.85	19.93	41.12	7.86		5.9	
Rotary mowers	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
10' Heavy duty	100	11,750	27.44	16.19	18.44	3.53		4.2	
20' Wing type	150	25,900	36.75	22.85	40.65	7.77		8.5	
Rake	Life = 15	Annual hours use = 50		Annual repair rate = 2% replacement cost			Salvage value = 10% replacement cost		
10' Rotary	40 without cab	6,500.0	10.73	6.05	17.30	2.60		4.2	
Forage harvester	Life = 6	Annual hours use = 400		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost		
SP 350 HP		242,500	102.50	46.71	—	—		8.5	
SP 450 HP		271,000	114.55	61.73	—	—		8.5	
20" Pulltype	150	37,600	36.75	22.85	15.89	2.82		6.8	
24" Pulltype	240	47,400	42.72	28.45	20.04	3.56		8.5	
Dump wagon	Life = 15	Annual hours use = 200		Annual repair rate = 2% replacement cost			Salvage value = 10% replacement cost		
Small (700 cu ft)		13,500	—	—	8.98	1.35		8.5	
Medium (900 cu ft)		18,500	—	—	13.21	1.85		8.5	
Large (1200 cu ft) conveyor type		21,000	—	—	13.97	2.10		8.5	

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Baling Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost			Twine Cost (\$/bale)	Total Cost (\$/bale)
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)		
Balers (standard)	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost				
Small 14" x 18" without cab	60	22,225	13.45	8.96	34.88	6.67	63.96	200	0.32	0.04	0.36
Large 16" x 18"	80	25,300	20.73	12.41	39.71	7.59	80.44	300	0.31	0.04	0.35
Large round	Life = 7	Annual hours use = 100		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost				
4' x 6' Bale	80	26,675	20.73	12.41	41.87	8.00	83.01	18	0.40	0.40	0.80
5' x 6' Bale	100	32,762	27.44	16.19	51.42	9.83	104.89	16	0.40	0.40	0.80
Large square	Life = 10	Annual hours use = 300		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost				
1500 - 2000 lb Bale	150	93,866	36.75	22.85	42.41	9.39	111.41	10	0.20	0.20	0.40
Bale wagons	Life = 12	Annual hours use = 150		Annual repair rate = 3% replacement cost			Salvage value = 50% replacement cost				
SP 160 Bale		140,000	119.00	45.76	—	—	164.76	400	0.40	—	0.40
Pull 104 Bale	120	35,000	31.85	19.93	29.75	7.00	88.53	240	0.37	—	0.37

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Combines

Years life = 7
 Annual use (Hrs) = 150, 200*, 250
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

Combine Cylinder Width	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (\$/hr)	Total Machine Cost (\$/hr)
SP Diesel	150			165.86		
50 Inch Cylinder	200	28	158,500	124.39		
(HP=175)	250			99.51		
SP Diesel	150			219.75		
60 Inch Cylinder	200	32	210,000	164.81		
(HP=270)	250			131.85		
Rotary type	150			193.48		
(Small)	200	34	184,900	145.11		
(HP=175)	250			116.09		
Rotary type	150			206.07		
(Medium)	200	39	196,933	154.56		
(HP=250)	250			123.64		
Rotary type	150			230.34		
(Large)	200	50	220,125	172.76		
(HP=300)	250			138.21		

* This Annual Hours Used figure is typical.

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Grinders, Mixers and Dryers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost	
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(bales/hr) (\$/bale)
Bale processor	Life = 12	Annual hours use = 80	Annual repair rate = 3%		replacement cost		Salvage value = 10% replacement cost	
Bale shredder	80	11,733	20.73	12.41	21.56	4.40		
Tub grinder	Life = 12	Annual hours use = 80	Annual repair rate = 3%		replacement cost		Salvage value = 10% replacement cost	
15 Tons/hour	120	14,500	31.85	19.93	26.64	5.44	15.0	
35 Tons/hour	150	29,500	36.75	22.85	54.20	11.06	35.0	
40 Tons/hour	180	38,000	42.99	19.63	69.82	14.25	40.0	
Portable grinder/ Mix	Life = 10	Annual hours use = 80	Annual repair rate = 3%		replacement cost		Salvage value = 10% replacement cost	
24" Screen and bale shredder	100	24,000	27.44	16.19	48.45	9.00		

Grain Dryers	Life = 12	Annual hours use = 200	Annual repair rate = 3%	replacement cost	Salvage value = 10%	replacement cost	Moisture Drop	
							20 - 14% (\$/Tonne)	17.5 - 14% (\$/Tonne)
Recirculating batch								
500 Bu 30,000 BTU	40	29,300	10.73	6.05	21.53	51.59	14.98 (6.0 T/hr)	9.99 (9.0 T/hr)
Continuous flow								
— small Propane = 110 L	40	45,000	10.73	6.05	33.07	52.29	17.02 (6.0 T/hr)	10.75 (9.5 T/hr)
— medium Propane = 14:40	40	60,000	10.73	6.05	44.10	69.03	14.43 (9.0 T/hr)	9.55 (13.6 T/hr)
— large Propane = 180 L	40	80,000	10.73	6.05	58.80	86.52	9.01 (18.0 T/hr)	5.96 (27.2 T/hr)

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Natural gas drying costs are lower than propane.

Other variables such as relative humidity and air temperature can dramatically affect fuel consumption and throughput.

Combines

Years life = 7
 Annual use (Hrs) = 150, 200*, 250
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

Combine Cylinder Width	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (\$/hr)	Total Machine Cost (\$/hr)
SP Diesel	150			165.86	44.58	210.44
50 Inch Cylinder	200	28	158,500	124.39	36.66	161.05
(HP = 175)	250			99.51	31.90	131.41
SP Diesel	150			219.75	56.72	276.47
60 Inch Cylinder	200	32	210,000	164.81	46.22	211.03
(HP = 270)	250			131.85	39.92	171.77
Rotary type	150			193.48	52.62	246.10
(Small)	200	34	184,900	145.11	43.38	188.49
(HP = 175)	250			116.09	37.83	153.92
Rotary type	150			206.07	57.33	263.40
(Medium)	200	39	196,933	154.56	47.48	202.03
(HP = 250)	250			123.64	41.57	165.22
Rotary type	150			230.34	67.03	297.37
(Large)	200	50	220,125	172.76	56.02	228.78
(HP = 300)	250			138.21	49.42	187.62

* This is a 1500 Hour Engine is special

4000 Hour Engine is 1500 Hour Engine is used to determine above Price Estimates

Grinders, Mixers and Dryers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost	
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(bales/hr) (\$/bale)
Bale processor	Life = 12	Annual hours use = 80	Annual repair rate = 3% replacement cost		Salvage value = 10% replacement cost			
Bale shredder	80	11.733	20.73	12.41	21.56	4.40	59.10	
Tub grinder	Life = 12	Annual hours use = 80	Annual repair rate = 3% replacement cost		Salvage value = 10% replacement cost			
15 Tons hour	120	14.500	31.85	19.93	26.64	5.44	83.86	15.0 5.59
35 Tons hour	150	29.500	36.75	22.85	54.20	11.06	124.87	35.0 3.57
40 Tons hour	180	38.000	42.99	19.63	69.82	14.25	146.70	40.0 3.67
Portable grinder/ Mix	Life = 10	Annual hours use = 80	Annual repair rate = 3% replacement cost		Salvage value = 10% replacement cost			
24" Screen and bale shredder	100	24.000	27.44	16.19	48.45	9.00	101.08	

Grain Dryers	Life = 12	Annual hours use = 200	Annual repair rate = 3%	replacement cost	Salvage value = 10%	replacement cost	Moisture Drop		
							20 – 14% (\$/Tonne)	17.5 – 14% (\$/Tonne)	
Recirculating batch									
500 Bu 30,000 BTU	40	29,300	10.73	6.05	21.53	51.59	89.91	14.98 (6.0 T/hr)	9.99 (9.0 T/hr)
Continuous flow									
— small Propane = 110 L	40	45,000	10.73	6.05	33.07	52.29	102.14	17.02 (6.0 T/hr)	10.75 (9.5 T/hr)
— medium Propane = 14.40	40	60,000	10.73	6.05	44.10	69.03	129.91	14.43 (9.0 T/hr)	9.55 (13.6 T/hr)
— large Propane = 180 L	40	80,000	10.73	6.05	58.80	86.52	162.10	9.01 (18.0 T/hr)	5.96 (27.2 T/hr)

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Natural gas drying costs are lower than propane.

Other variables such as relative humidity and air temperature can dramatically affect fuel consumption and throughput.

Farm Trucks

Years life = 15
Annual use (Hrs) = 50, 150*, 450
Annual repair rate = 3% of Replacement cost
Salvage Value = 50% Replacement cost

Truck Size	Annual Hours Used	Diesel Fuel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Total Variable Cost (\$/hr)	Total Truck Cost (\$/hr)
General Trucking	50					
3 ton diesel	150	31.00	65,000	155.68	53.26	208.94
W box & hoist	450			51.89	27.26	79.15
				17.30	18.59	35.89
4 ton diesel	50			179.63	62.48	242.11
150	150	38.00	75,000	59.88	32.48	92.36
W box & hoist	450			19.96	22.48	42.44
5 ton diesel	50			222.74	75.58	298.32
150	150	43.00	93,000	74.25	38.38	112.63
W box & hoist	450			24.75	25.96	50.73

*This Annual Hours Used figure is typical.

Rock Pickers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Rock picker	Life = 10	Annual hours use = 150	Annual repair rate = 6% replacement cost Salvage value = 50% replacement cost						
Rake — picker combo	80	18,000	20.73	12.41	16.27	7.20	56.61	2.1	26.69
— reel type	80	17,500	20.73	12.41	15.82	7.00	55.96	2.1	26.38

400 Annual Hours or Tractor Use figures are used to determine above Power Unit costs.

Grain Vacuums

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(bu/hr)	(\$/bu)
Grain vacuums	Life = 15	Annual hours use = 150	Annual repair rate = 3% replacement cost Salvage value = 10% replacement cost						
Large	120	14,000	31.85	19.93	12.42	2.80	66.99	1800.0	0.04

400 Annual Hours or Tractor Use figures are used to determine above Power Unit costs.



Farm Trucks

Years life = 15
Annual use (Hrs) = 50, 150*, 450
Annual repair rate = 3% of Replacement cost
Salvage Value = 50% Replacement cost

Truck Size	Annual Hours Used	Diesel Fuel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Total Variable Cost (\$/hr)	Total Truck Cost (\$/hr)
General Trucking	50					
3 ton diesel	150	31.00	65,000	155.68	53.26	
W/box & hoist	450			51.89	27.26	
				17.30	18.59	
4 ton diesel	50			179.63	62.48	
150	38.00	75,000	59.88	32.48		
W/box & hoist	450			19.96	22.48	
5 ton diesel	50			222.74	75.58	
150	43.00	93,000	74.25	38.38		
W/box & hoist	450			24.75	25.96	

* This Annual Hours Used figure is typical.

Rock Pickers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Rock picker	Life = 10	Annual hours use = 150	Annual repair rate = 6% replacement cost Salvage value = 50% replacement cost						
Rake — picker combo	80	18,000	20.73	12.41	16.27	7.20		2.1	
— reel type	80	17,500	20.73	12.41	15.82	7.00		2.1	

4(X) Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Grain Vacuums

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(bu/hr)	(\$/bu)
Grain vacuums	Life = 15	Annual hours use = 150	Annual repair rate = 3% replacement cost Salvage value = 10% replacement cost						
Large	120	14,000	31.85	19.93	12.42	2.80		1800.0	

4(X) Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Calculating Farm Machinery Costs

Preface

The worksheets and tables on the following pages can be used to calculate the costs of operating your own machines. An explanation of the variables is provided on the following page. A sample calculation is done for you on pages 33 through 35, and blank worksheets are provided on pages 36 through 38. Standards for fuel consumption, depreciation, annual use, repair rates and field efficiency are given in the tables on pages 39 and 40. **During 1999, we developed an online machinery cost calculator that brings the worksheet on page 34 to life. This calculator is available free of charge to you at www.agric.gov.ab.ca/machcost**

Online Cost Calculator Instructions

To use the calculator:

Page 1 has 3 pop windows:

1. Power units and self propelled — click on it and scroll down until you find the machine you want and highlight it (e.g. 300hp tractor)
2. Implement 1 — if you selected a tractor in the first window, now select the implement you want to pull (e.g. 40 ft air seeder). If you selected a self-propelled machine, don't go here.
3. Implement 2 — if you aren't pulling two implements, click on this and select the second implement (e.g. harrow packer). If you aren't pulling two implements in tandem, ignore the second implement.
- 4 After selecting the machine(s) you want, click on the **proceed to calculator** button and page 2 will appear.

Page 2 has the cost information for the specific machine you chose from the data base. All these numbers are soft, so you can override one or all of them and enter your own numbers. To do this, just click on the number you want to change and type in the new number. When you have all the input data modified to your satisfaction, click on **calculate costs**.

Page 3 — the top (Input Parameters) is a summary of your input data. The bottom is the calculated cost result. If you want to change any of the inputs, click on the back button, which will take you back to the second page.

If you have any problems using the calculator, please contact Dann Mattson at (403) 556-4248 or email dann.mattson@gov.ab.ca

If you need further assistance in using this material, contact an Alberta Agriculture, Food and Rural Development Farm Management Specialist at one of the following locations.

Airdrie	(403) 948-8524
Barrhead	(780) 674-8213
Claresholm	(403) 625-1445
Fairview	(780) 835-2241
Leduc	(780) 986-8985
Red Deer	(403) 340-7007
Stettler	(403) 742-7500
Taber	(403) 223-7907
Vegreville	(780) 632-5400

To contact a Farm Management Specialist outside your local calling area, use the RITE system for toll-free long distance service. Just dial 310-0000 and then enter the seven digit number of the office you want or stay on the line to get operator assistance.

Machinery Cost Terms

Record all the information needed to calculate ownership and operating costs on page 34. Items **N** through **Q** will require use of the formulas on page 33.

Term	Line	Information Required
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Machine description		The machine's make and model.
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Data and Assumptions

Today's new price	A	The suggested retail price of the desired machine (new or used).
Planning period	B	The number of years the machine will be owned.
Today's used price	C	The price of a used machine that is similar to the new, desired machine and as old as the planning period.
Annual hours of use	D	Total annual use for all operations.
Fuel usage	E	Litres or gallons per hour.
Fuel cost	F	\$ per gallon or litre
Labour cost	G	\$ per hour
Annual repair rate	H	Percentage of new price [refer to table on page 39].
Risk-free interest rate	I	The Bank of Canada 90 day T-Bill rate or equivalent.
Risk premium	J	A value estimate that represents the additional risk of the investment over and above the 90 day T-bill rate. [6% is commonly used]
Marginal tax rate	K	The expected marginal tax rate of the farm business during the planning period.
Rate of inflation	L	The current rate of inflation, e.g. the consumer price index.

Term	Line	Information Required
------	------	----------------------

Capital cost allowance Class rate	M	The appropriate tax percentage depreciation rate for the machine. Generally: 30% for tractors, trucks and self-propelled machines: 20% for pull-type equipment.
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Formulas

Real discount rate	N	Interest rate adjusted for expected risk and inflation. [calculated on page 33]
Real discount factor	O	Value used to arrive at the present value (dollar amount) of the future salvage value of the machine. [calculated on page 33]
Capital cost allowance (CCA) Adjustment factor	P	Value used to arrive at the after tax capital outlay as well as adjustment for the after tax salvage value. [calculated on page 33]
Capital recovery factor	Q	Value that recovers that capital value of the machine through time with the specified real return. [calculated on page 33]

Using the Data and Assumptions [items A through M] and the Formula Results [items N through Q], calculate the ownership and operating costs for the machine combination. The summary sheet on page 35 can be used to list and total costs for all field operations and to calculate per acre (bale, bushel, etc.) values.

Worksheet Formulas

N Real Discount Rate

$$= \left[\left(\frac{(1 + I + J)}{1 + L} \right)^{-1} \right] \times (1 - K) = \left[\left(\frac{(1 + .055 + .06)}{1 + .02} \right)^{-1} \right] \times (1 - .0)$$

I = Interest rate
J = Risk premium
K = Marginal tax rate
L = Rate of inflation

$$= .0931$$

O Real Discount Factor – Power unit or self-propelled machine

$$= \frac{1}{(1 + N)^B} = \frac{1}{(1 + .0931)^{12}} = .34348$$

Implement 1

$$= \frac{1}{(1 + .0931)^6} = .58607$$

Implement 2

$$= \frac{1}{(1 + \quad)^{\quad}} = \quad$$

B = Planning period
N = Real discount rate

P CCA Adjustment Factor – Power unit or self-propelled machine

$$= 1 - \left(\frac{M \times K}{M + N} \right) = 1 - \left(\frac{.30 \times .0}{.30 + .0931} \right) = 1$$

Implement 1

$$= 1 - \left(\frac{.20 \times .0}{.20 + .0931} \right) = 1$$

Implement 2

$$= 1 - \left(\frac{\quad \times \quad}{\quad + \quad} \right) = \quad$$

K = Marginal tax rate
M = CCA class rate
N = Real discount rate

Q Capital Recovery Factor

$$= \frac{N}{(1 - O)} = \frac{.0931}{(1 - .34348)} = .1418$$

Implement 1

$$= \frac{.0931}{(1 - .58607)} = .2249$$

Implement 2

$$= \frac{\quad}{(1 - \quad)} = \quad$$

N = Real discount rate
O = Real discount factor

Machinery Cost Worksheet

Field Operation	Power Unit or self- propelled unit	Implement 1	Implement 2	Total
Machine descriptions:				
	<u>300 HP</u> <u>4 WD</u>	<u>40 ft</u> <u>Air Drill</u>		
Data & assumptions				
A New price	<u>157,867</u>	<u>\$ 102,625</u>	<u>\$</u>	
B Planning period (years)	<u>12 yrs</u>	<u>6 yrs</u>	<u>yrs</u>	
C Used price	<u>78,933</u>	<u>\$ 51,312</u>	<u>\$</u>	
D Annual hours of use (total use all operations)	<u>400 hrs</u>	<u>100 hrs</u>	<u>hrs</u>	
E Fuel usage (litres per hour)	<u>58 l/hr</u>			
F Fuel cost (\$ per litre)	<u>\$ 0.40</u>			
G Labor cost (\$ per hour)	<u>\$ 0</u>			
H Annual repair rate (% of new price)	<u>3.0 %</u>	<u>3.0 %</u>	<u>%</u>	
I Interest rate (risk free)	<u>5.5 %</u>			
J Risk premium	<u>6.0 %</u>			
K Marginal tax rate	<u>0 %</u>			
L Rate of inflation	<u>2.0 %</u>			
M CCA class rate	<u>30 %</u>	<u>20 %</u>	<u>%</u>	
Formula results				
N Real discount rate	<u>.0931</u>			
O Real discount factor	<u>.34348</u>	<u>.58607</u>		
P CCA adjustment factor	<u>1</u>	<u>1</u>		
Q Capital recovery factor	<u>.1418</u>	<u>.2249</u>		
Ownership Costs				
1. Capital recovery (\$ per year)				
= [(Line A x Line P) - (Line C x Line P x Line O)] x Line Q	<u>18,541</u>	<u>\$ 16,317</u>	<u>\$</u>	
2. Insurance and housing (\$ per year) = Line A x 1%	<u>1,579</u>	<u>\$ 1026</u>	<u>\$</u>	
3. Total annual ownership costs = Line 1 + Line 2	<u>20,120</u>	<u>\$ 17,343</u>	<u>\$</u>	
4. Total ownership costs per hour = Line 3 ÷ Line D	<u>50.30</u>	<u>\$ 173.43</u>		<u>\$223.73</u>
Operating Costs				
5. Fuel cost = Line E x Line F x Line D x (1 - Line K)	<u>\$ 9,280</u>			
6. Lubrication = Line 5 x 15%	<u>\$ 1,392</u>			
7. Repairs = Line A x Line H	<u>4,736</u>	<u>\$ 3,079</u>	<u>\$</u>	
8. Labor = Line D x Line G	<u>\$ 0</u>			
9. Total annual operating costs = Line 5 + Line 6 + Line 7 + Line 8	<u>15,408</u>	<u>\$ 3,079</u>	<u>\$</u>	
10. Total annual operating costs per hour = Line 9 ÷ Line D	<u>38.52</u>	<u>\$ 30.79</u>		<u>\$69.31</u>
Total Cost				
1. Total annual costs = Line 3 + Line 9	<u>35,528</u>	<u>\$ 20,422</u>	<u>\$</u>	
2. Total cost per hour = Line 4 + Line 10	<u>88.82</u>	<u>\$ 204.22</u>		<u>\$293.04</u>

See online Machinery Cost Calculator at www.agric.gov.ab.ca/machcost

Worksheet Formulas

N Real Discount Rate

$$= \left[\left(\frac{(1 + I + J)}{1 + L} \right)^{-1} \right] \times (1 - K) = \left[\left(\frac{(1 + \underline{\quad} + \underline{\quad})}{1 + \underline{\quad}} \right)^{-1} \right] \times (1 - \underline{\quad})$$

I = Interest rate

J = Risk premium

K = Marginal tax rate

L = Rate of inflation

=

O Real Discount Factor – Power unit or self-propelled machine

$$= \frac{1}{(1 + N)^B}$$

$$= \frac{1}{(1 + \underline{\quad})}$$

$$= \underline{\quad}$$

Implement 1

$$= \frac{1}{(1 + \underline{\quad})}$$

$$= \underline{\quad}$$

Implement 2

$$= \frac{1}{(1 + \underline{\quad})}$$

$$= \underline{\quad}$$

B = Planning period

N = Real discount rate

P CCA Adjustment Factor – Power unit or self-propelled machine

$$= 1 - \left(\frac{M \times K}{M + N} \right)$$

$$= 1 - \left(\frac{\underline{\quad} \times \underline{\quad}}{\underline{\quad} + \underline{\quad}} \right)$$

$$= \underline{\quad}$$

Implement 1

$$= 1 - \left(\frac{\underline{\quad} \times \underline{\quad}}{\underline{\quad} + \underline{\quad}} \right)$$

$$= \underline{\quad}$$

Implement 2

$$= 1 - \left(\frac{\underline{\quad} \times \underline{\quad}}{\underline{\quad} + \underline{\quad}} \right)$$

$$= \underline{\quad}$$

K = Marginal tax rate

M = CCA class rate

N = Real discount rate

Q Capital Recovery Factor

$$= \frac{N}{(1 - O)}$$

$$= \frac{\underline{\quad}}{(1 - \underline{\quad})}$$

$$= \underline{\quad}$$

Implement 1

$$= \frac{\underline{\quad}}{(1 - \underline{\quad})}$$

$$= \underline{\quad}$$

Implement 2

$$= \frac{\underline{\quad}}{(1 - \underline{\quad})}$$

$$= \underline{\quad}$$

N = Real discount rate

O = Real discount factor

Machinery Cost Worksheet

Field Operation

Power Unit
or self –
propelled
unit

Implement 1

Implement 2

Total

Machine descriptions:

Data & assumptions

A New price	\$	\$	\$
B Planning period (years)	_____ yrs	_____ yrs	_____ yrs
C Used price	\$	\$	\$
D Annual hours of use (total use all operations)	_____ hrs	_____ hrs	_____ hrs
E Fuel usage (litres per hour)	_____ l/hr		
F Fuel cost (\$ per litre)	\$		
G Labor cost (\$ per hour)	\$		
H Annual repair rate (% of new price)	_____ %	_____ %	_____ %
I Interest rate (risk free)	_____ %		
J Risk premium	_____ %		
K Marginal tax rate	_____ %		
L Rate of inflation	_____ %		
M CCA class rate	_____ %	_____ %	_____ %

Formula results

N Real discount rate	_____		
O Real discount factor	_____	_____	_____
P CCA adjustment factor	_____	_____	_____
Q Capital recovery factor	_____	_____	_____

Ownership Costs

1. Capital recovery (\$ per year)			
= [(Line A x Line P) – (Line C x Line P x Line O)] x Line Q	\$	\$	\$
2. Insurance and housing (\$ per year) = Line A x 1%	\$	\$	\$
3. Total annual ownership costs = Line 1 + Line 2	\$	\$	\$
4. Total ownership costs per hour = Line 3 ÷ Line D	\$	\$	\$

Operating Costs

5. Fuel cost = Line E x Line F x Line D x (1 – Line K)	\$		
6. Lubrication = Line 5 x 15%	\$		
7. Repairs = Line A x Line H	\$	\$	\$
8. Labor = Line D x Line G	\$		
9. Total annual operating costs = Line 5 + Line 6 + Line 7 + Line 8	\$	\$	\$
10. Total annual operating costs per hour = Line 9 ÷ Line D	\$	\$	\$

Total Cost

1. Total annual costs = Line 3 + Line 9	\$	\$	\$
2. Total cost per hour = Line 4 + Line 10	\$	\$	\$

See online Machinery Cost Calculator at www.agric.gov.ab.ca/machcost

Machinery Cost Summary

Machine	Annual hours	Working width (ft)	Working speed (mph)	Field efficiency	Acres per hour	\$ per hour	\$ per hour (power unit & implement)	\$ per acre
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Fuel Consumption for Varying Tractor Horsepower¹

	Diesel tractors	Gasoline tractors	Diesel tractors	Gasoline tractors
Two-wheel drive PTO HP				
30 - 39	—	31.5	—	
40 - 49	—	38.3	—	
50 - 59	48.2	47.1	10.5	
60 - 69	56.2	55.2	13.6	
70 - 79	65.5	64.5	16.4	
80 - 89	73.5	74.5	17.7	
90 - 99	84.0	82.0	20.5	
100 - 119	90.3	—	22.7	—
120 - 139	111.6	—	28.2	—
140 - 159	128.9	—	32.3	—
160 - 179	145.8	—	38.6	—
Over 180	148.9	—	39.1	—
Four-wheel drive DBHP				
100 - 149	135.0	—	33.2	—
150 - 174	159.4	—	40.3	—
175 - 199	182.8	—	50.0	—
200 - 224	217.4	—	53.0	—
225 - 249	235.5	—	58.0	—
250 - 274	265.0	—	61.4	—
275 - 299	281.3	—	62.6	—
300 - 349*	305.0	—	66.4	—

This data on fuel consumption for different sizes of tractors was calculated from the Nebraska Tractor Tests Reports. The fuel consumption figures are based on "75% of Pull at Maximum Power." These fuel consumption figures are for tractors under normal load in average field conditions. Fuel use per hour will be affected by:

- load factor (75% is assumed in these estimates)
- engine RPM
- gear
- correct engine tuning

While these figures may be a good indication of fuel use per hour for a machine, fuel consumption per acre will be affected by the Field Efficiency related to each operation. Estimation of total fuel consumption should take this factor into account. Some factors that can significantly affect field efficiency include:

- wheel slippage
- tire pressure
- tractor ballast
- depth of and sharpness of implement
- soil type and condition
- amount of turning required
- implement overlap in each pass
- downtime to refill seed and fertilizer boxes

¹This data was summarized from "Nebraska Tractor Test Summary 1972 through 1981," *The Grain Grower*, Page 762 (UGG), April 1982 and from 1980 - 1981 Agricultural Yearbook, S.S.A.E, May, 1980, pp 537 - 545.

²Average drawbar horsepower for all tractors in each range.

³Average fuel consumption for all tractors in each range.

Machinery Costs Assumption Guide

Tractors	10	400	3%	—	50%
Combines	7	150	3%	60 - 80%	50%
Cultivators	15	250	3 - 8%	70 - 90%	10%
Discers	15	150	3%	70 - 90%	10%
Seed drills	6	100	2%	65 - 80%	50%
Harrows, packers	15	40	2%	70 - 90%	10%
Sprayers	15	50	2%	50 - 80%	10%
Stone pickers	15	40	2%	50 - 90%	50%
Swathers	7	100	3%	70 - 85%	50%
Rakes	15	50	2%	60 - 90%	10%
Mower-conditioner	6	50	2%	60 - 85%	50%
Forage harvester	6	80	3%	50 - 80%	50%
Standard balers	7	80	3%	50 - 85%	50%
Large round balers	7	60	2%	60 - 85%	50%
Grain dryers	12	200	3%	—	10%
Loaders	15	40	2%	—	10%
Air drills	6	100	2%	65 - 80%	50%

¹ Estimated average number of years until a machine depreciates to the salvage value.

² Estimated average annual farm use.

³ Estimates are based on average conditions and the indicated annual hours of use. Repair rates may be higher for older machines, more hours of annual use or more difficult working conditions.

⁴ Field efficiency is a percentage estimate of the amount of time machinery is actually in use relative to the total time required to complete an operation (refer also to page 39).

Acres Per Hour

Acres per hour or "effective field capacity" can be calculated using the following formula:

Acres per hour (effective field capacity)

$$= \frac{\text{machine width (ft)} \times \text{speed (mph)} \times \text{field efficiency}}{8.25}$$

e.g. A thirty-one foot cultivator travelling at 5 mph operating at 80% field efficiency would have an effective field capacity of:

Acres per hour

$$= \frac{31 \times 5 \times .80}{8.25} = 15 \text{ ac/hr}$$

Power Required for Tillage

Machine	(H.P./Ft. width)			
	H.P. Drawbar		H.P. P.T.O.	
	2" (5 mph)	5" (5 mph)	Light (6.2 mph)	Heavy (6.2 mph)
Chisel Plow	1.5	3.4	5.0	6.0
Field Cult.	.7	1.8(4")	3.4	5.0
Tandem Disc	1.6	5.0	5.1	7.5
Blade Cult.	2.6	4.5	4.8 (5 mph)	



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